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March 6, 2014

Director, Air Enforcement Division
Office of Regulatory Enforcement
U.S. Environmental Protection Agency, Mail Code 2242-A
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460-0001

Subject: *United States v Equilon Enterprises, LLC*
Civil Action Number H-01-0978
Southern District of Texas entered August 21, 2001

Flaring Incident Report – February 6, 2014
Shell Oil Products US, Puget Sound Refinery

Dear Sir or Madam:

Pursuant to Section VIII, Paragraph 136 of the consent decree in *United States v Equilon Enterprises LLC*, Civil Action Number H-01-0978, entered August 21, 2001 by the United States District Court for the Southern District of Texas, Shell Oil Products US submits the following information regarding a Hydrocarbon Flaring Incident, as defined in Paragraph 120(f), that occurred at the Puget Sound Refinery. The incident was investigated and a detailed report listing the root causes is included in the attached Incident Report.

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein and that I have made a diligent inquiry of those individuals immediately responsible for obtaining the information and that to the best of my knowledge and belief, the information submitted herewith is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

If you have any comments or questions regarding this information, please contact Tim Figgie at (360) 293-1525.

Sincerely,

Thomas J. Rizzo
General Manager

Enclosure

cc (w/enclosures):

Director, Air Enforcement Division
U.S. Environmental Protection Agency
c/o Matrix Environmental & Geotechnical Services
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Director
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# FLARING INCIDENT REPORT

**Type of Incident:** ☐ **Acid Gas / SWSG** ☐ **Tail Gas** ☒ **Hydrocarbon**

**Brief Description of Incident:**

On February 6th, 2014 at about 6:10am an event resulted in flaring of more than 500 lbs of SO2, 4 periods of exceedance of the 162ppm 3hr rolling average limit and a 1hr average exceedance of the 1000ppm SO2 corrected to 7% excess SO2 limit. There was also an exceedance of the 1hr average CO limit on Gas Turbine Generator #2 (GTG2) upon shutdown of the unit.

On the time leading up to the morning of the 6th, a cold weather front had moved into the area. Liquids in the 63PG-1 instrument system froze causing a high purge gas pressure reading on the fuel gas to GTG2. This resulted in the GTG2 control system to automatically switch the turbine to liquid fuel. A low pressure indication on the liquid fuel hydraulic trip oil solenoid caused GTG2 to shutdown, which caused a drop in the steam header pressure. This in turn resulted in Erie City Boiler No. 1 (ECB1) to increase in steam production. Then, ECB1 tripped out due to the fuel gas pressure reaching the safety protective system trip point. The shutdowns of GTG2 and ECB1 resulted in plant-wide steam supply impacts and excess flaring.

Air operating permit term deviations: 4.10, 4.11, flare 162ppm 3hr avg (no permit term), FGR unit not operating (no permit term) and Cogen 5.9.

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|---|---|---|---|
| **Incident Start Date:** | 2/6/2014 | **Incident Start Time:** | 6:10 AM |
| **Incident End Date:** | 2/6/2014 | **Incident End Time:** | 10:40 AM |

| | | |
|---|---|---|
| **Estimated Sulfur Dioxide Emissions: (Attach below):** | 3,145 lbs SO2; 1 lb CO | **Pounds** |
| SO2 lbs/hr = 0.995*(flare gas flow, MSCFH * 1000) * (Sulfur, vol% / 100) * (64.0648/379), where 0.995 is flare efficiency, 64 #/#-mole is the MW of SO2 and 379 is scf/#-mole | | |

**Steps taken to limit the duration and/or quantity of sulfur dioxide emissions:**

FGR compressors were operating during the initial event and the FCCU charge rate was reduced.

## ANALYSIS OF INCIDENT AND CORRECTIVE ACTIONS

**Primary and contributing causes of incident:**

The initiating root cause of this event was a high pressure reading on instrument 63PG-1 due to liquids freezing in fuel gas line followed by a failed hydraulic oil solenoid on the liquid fuel system on GTG2 and an ECB1 burner pressure safety trip set point being low.

**Analyses of measures available to reduce likelihood of recurrence (evaluate possible design, operational, and maintenance changes; discuss alternatives, probable effectiveness, and cost; determine if an outside consultant should be retained to assist with analyses):**

To prevent a reoccurrence of this event the 63PG-1 instrument system has been protected in a heated enclosure. Also, PSR is planning to replace the hydraulic oil solenoid on GTG2 during the 2014 maintenance turnaround and to eliminate the liquid fuel capability during the 2015 major turnaround. Regarding the ECB1 trip, the control system has been modified to prevent this type of fuel gas trip from reoccurring.

**Description of corrective action to be taken (include commencement and completion dates):**

See above.

**If correction not required, explain basis for conclusion:**

See above.

**The incident was the result of or resulted in the following (check all that apply):**

- ☐ **Error from careless operation**
- ☒ **Equipment failure due to failure to operate and maintain in accordance with good engineering practice**
- ☒ **Sulfur dioxide emissions greater than 20 #/hr continuously for three or more consecutive hours**
- ☐ **Caused the number of Acid Gas or Tail Gas incidents in a rolling twelve-month period to exceed five**
- ☐ **None of the above**

**Was the root cause identified as a process problem isolated within an SRP?**

- ☐ **Yes (An optimization study of the affected SRP is required as part of the corrective actions identified above.)**
- ☒ **No**

**The root cause of the incident was:**

- ☒ **Identified for the first time since March 21, 2001**
- ☐ **Identified as a recurrence since March 21, 2001 (explain previous incident(s) below)**

**Was the root cause of the incident a malfunction?**

- ☐ **Yes (describe below)**
- ☒ **No**

**Definition of Malfunction:** ***Any sudden, infrequent, and not reasonably preventable failure of air pollution control equipment, process equipment, or failure of a process to operate in a normal or usual manner. Failures that are caused in part by poor maintenance or careless operation are not malfunctions.***

**REPORTING REQUIREMENTS**

**Submit initial report, supporting documents and assessment of stipulated penalties, if any, within 30 days of the incident to the EPA Regional Office and Northwest Clean Air Agency.**

| | |
|---|---|
| **If at the time the first report is submitted (within 30 days of the incident), corrective actions have not been determined a follow-up report is required within 45 days of first report (unless otherwise approved by the EPA). Provide anticipated date of follow-up report.** | Stipulated penalties do not apply to hydrocarbon flaring events. |

**Prepared By: _____Tim Figgie _____ Date: ___March 5, 2014___**